

**VOLUME IV  
TEST MANAGEMENT PHASE**

**CHAPTER 11  
QUALITATIVE FLIGHT TESTING**

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**DTIC QUALITY INSPECTED 1**

## PURPOSE

Qualitative flight testing determines the maximum amount of information in the minimum amount of flying time in order to evaluate an aircraft with respect to its entire mission or some specific area of interest.

Qualitative flight testing has essentially the same purpose as quantitative flight testing, i.e., to determine how well the aircraft flies and how well it will perform its designed mission. To accurately evaluate an aircraft from quantitative data requires analysis of large amounts of precisely measured data. The best a pilot can hope to do on a qualitative evaluation is to measure a limited amount of quantitative data. Thus, the test pilot's opinion on the acceptability of the aircraft is the important result and measured quantitative data (when available) is used primarily to support this opinion. Quantitative values of stick forces measured with a hand gage, for example, should be included in the report to support the pilot's opinion of acceptability. Estimates of stick forces can be made if no reliable measurements are available or qualifying terms such as "heavy", "medium", or "light" can be used to describe the forces. The point is that the difference in evaluating an aircraft qualitatively and quantitatively is a matter of degree. "Use what you've got." Pilot opinion supported by measured data is primary in qualitative testing, while the reverse is true in quantitative testing. The general rule is to first decide how well the aircraft does its job and then use the quantitative data you can get to support your opinion.

## PILOT OPINION

Naturally, all pilots will not have exactly the same opinion regarding the acceptability of a particular aircraft characteristic. No two people think exactly alike. However, the opinions of pilots with similar experience and background will usually not differ greatly, particularly with respect to the capability of an aircraft to perform a specific mission. In other respects, such as cockpit arrangements, the opinions may vary more markedly.

For this reason, it is important for the qualitative test pilot to be as objective as possible in his evaluation. Guides which specify military requirements, such as MIL-STD-203F , should be used wherever possible to establish acceptability. However, mere compliance with a set of requirements does not necessarily yield a satisfactory aircraft. The primary question is "will it do the job?", not "does it meet the specifications?"

#### MISSION PREPARATION

A very limited amount of flight time is normally available for a qualitative evaluation. To acquire the information necessary to write an accurate and comprehensive report on an aircraft in this limited time requires a great deal of preflight study and planning.

The preflight preparation for a qualitative test is extremely important. It is almost impossible to put in too much time in planning for the flights. The amount of information acquired in the air will be directly proportional to the amount of preparation put in on the ground. A pilot who doesn't know what he is looking for is not likely to find it, and to know exactly what to look for in the evaluation requires considerable knowledge of the aircraft and its mission.

The precise mission of the aircraft is important in determining what specific investigations should be made in the evaluation. All fighters, for instance, do not have the same mission, and the characteristics of particular importance may not be the same. The roll characteristics of an air superiority fighter would be more important than for a long range strategic fighter, and the specific test plan should take this fact into account. Expected outstanding characteristics or weaknesses should also receive particular emphasis. Of course, the evaluation must be conducted within the cleared flight envelope of the aircraft, and the amount of flight time available may limit the number of altitudes, airspeeds, and tests that can be investigated. However, concentration on the extremes of altitudes, airspeeds, etc., and the

areas dictated by the primary mission will provide the best approach to the test planning.

An outline of the test to be conducted and the various altitudes, air-speeds, and configurations to be used will aid in organizing the flights and planning the flight data cards. The points included in the outline should be compatible with the time available for the evaluation but it is always wise to overplan the flight and include more than seems possible to accomplish in the allotted time. Leave yourself the option of skipping the less important parts of your plan if time or fuel runs short. The sequence of tests should be such that as little time as possible is wasted. With proper planning a continuous flow from one investigation to the next is possible.

#### FLIGHT DATA CARDS

Before planning the flight data cards, as much as possible should be learned about the aircraft. Study the pilot's handbook if one is available, discuss the aircraft with the engineers, or with other pilots who have flown it, and get adequate cockpit time. The more the pilot knows about the aircraft and the more comfortable he is in it, the more thorough the evaluation will be. A pilot who doesn't know the aircraft procedures, both normal and emergency, or who has to spend most of his time in the air looking for controls or switches will not be able to do much evaluating.

The flight data cards should be self explanatory and should include all the points to be investigated during the flight. They should be designed so that a minimum of writing is required in the air because time will not be available to write down more than a word or two about each point. Remember, however, to provide places in the flight plan to write down these necessary comments. Numerous forms for the data cards are possible but completeness and legibility are essential.

Figures 1 through 4 present some possible formats and ideas for flight evaluation cards.

## GENERAL TECHNIQUES

The cockpit evaluation can normally be made while getting cockpit time prior to the first flight. MIL-STD-203F specifies the standard cockpit arrangement for the various types of aircraft in considerable detail and should be used as a guide in making the cockpit evaluation. However, a summary of some of the points to note may prove helpful. These include ease of entry, comfort, adjustment of seat and controls, location of basic flight instruments, size and legibility of instruments, accessibility of switches and controls, ease of identification of switches and controls, location and identification of emergency switches and controls, methods of escape (both on the ground and airborne), and general impression of cockpit layout.

Several points should be observed and recorded during the start and while preparing the aircraft for flight. These should be weighed against the aircraft's mission requirements. An all-weather interceptor, for example, should be capable of fast, uncomplicated starts to meet its alert and scramble requirements. Starts for other types may not be so critical; however, no starting procedure should be unnecessarily complex or confusing. Evaluation of the start should include: complexity of start, time to prepare for start, time to start, external power and ground support equipment required, ground personnel required, and time from start to taxi. The system checks and normal procedure requirements from start to taxi should also be evaluated.

An evaluation of the ground handling characteristics can be made while taxiing. How much power is required to start moving and to taxi at the desired speed? Is braking action required to prevent taxiing too fast? Is the visibility adequate? Is the directional control satisfactory? Is the braking action satisfactory? What is the turning radius of the aircraft? Does the aircraft require any auxiliary equipment such as removable wheels, escape ladders, etc? Is there any problem with clearing obstacles with any part of the aircraft?

The takeoff distance may be difficult to determine without assistance from outside personnel, but an estimate should be made using whatever aid is available such as runway distance markers. Use the recommended takeoff procedure; don't try to make a maximum performance takeoff. The normal ground roll will be of more interest than the minimum possible. Some of the other

points to note in the takeoff include: ability of brakes to hold in military power, directional control during ground roll, rudder effective speed, nose lift-off speed, visibility after nose up and during initial acceleration and climb, force required to raise nose, any over-controlling tendencies, airborne speed, adequacy of recommended takeoff trim settings, time to retract gear and flaps, trim changes with retraction of gear and flaps, any tendency to exceed gear or flap speed limitations, effectiveness of trimming action during acceleration, and any distracting noises or vibrations.

The in-flight techniques differ very little from the techniques used in flying quantitative tests. However, it generally is not necessary to be as precise in holding airspeeds and altitudes. To do so would only waste time because differences caused by variations of a few hundred feet in altitude or a few knots in airspeed will not be qualitatively discernible. This is not an endorsement for being lax in flying the aircraft. Just don't waste time with precision that will not contribute to the evaluation of the aircraft. If speeds are critical, such as in the climb or in the pattern, then maintain them as closely as possible. Otherwise, use good judgment in determining how close to an aim condition it is necessary to be and fly accordingly.

If the climb rate of the aircraft is relatively slow, it may be possible to get some stability information in the climb, i.e., stick pulses, sideslips, etc. Most present day fighter aircraft climb so rapidly that this may not be practical. If so, just record climb performance data (time, fuel, and indicated speed) at intervals of approximately 5,000 feet. Start the time at brake release. Intercept the climb schedule at a comfortable altitude and attempt to fly the recommended schedule precisely. Continue the climb only as far as necessary to meet the objective of the flight. Unless climb performance is of primary importance, this will probably be to the altitude selected for the first series of investigations. General aircraft characteristics should be observed during the climb. How difficult is it to maintain the recommended climb schedule? Are the control responses smooth, too fast, too slow? Is visibility adequate? Is there any buffet, vibration or excessive noise? Are the ventilation and pressurization systems satisfactory? Are the normal procedures complicated or excessively distracting? If dampers or other artificial stability devices are provided, check the applicable characteristics with them ON and OFF.

The altitude selected for the first series of stability investigations may be at the tropopause since this is where the aircraft will probably have its best performance. However, if the designed operating altitude is considerably higher it may be advisable to select an altitude at or near the aircraft's operating altitude. The stability maneuvers performed will be essentially the same at all the altitudes and airspeeds selected. These should be sufficiently spaced to assure discernible qualitative differences in the aircraft's characteristics.

The stability characteristics investigated should include longitudinal and directional static stability, longitudinal and directional dynamic stability, aileron rolls, and maneuvering flight at several different airspeeds and altitudes. An investigation of the transonic trim changes also should be made. All the dynamic characteristics should be checked with the stability augmentation devices, if any, both ON and OFF. With proper planning these investigations can be made in a minimum amount of time. The longitudinal static stability can be checked while accelerating to  $V_{\max}$ , for instance. Once at  $V_{\max}$ , the aircraft can be trimmed for approximately hands-off flight and the static directional stability checked by entering a steady sideslip out to maximum rudder deflection (if the aircraft is cleared to that limit). The periods of the dynamic modes can be timed using a stop watch or counting the seconds. Estimate the number of the cycles to damp completely or to one-half amplitude, as the case may be, for all the modes.

Approach the aileron rolls cautiously. Make several partial deflection rolls before making any full deflection rolls. The time to reach  $90^\circ$  of roll and the time to roll  $360^\circ$  can be estimated using a stopwatch or again by counting the seconds. It is advisable to make rapid reversals of ailerons and other rolling maneuvers if these can be expected in operational use of the aircraft. The rolling characteristics should also be checked in accelerated flight as well as lg flight.

After completion of investigations at  $V_{\max}$ , a windup turn to limit load factor can be made to check the maneuvering stability of the aircraft. Then zoom back to the original altitude and repeat these investigations at the second airspeed. The other altitudes and airspeeds can be checked in the same

manner. Any differences resulting from altitude or speed changes should be noted.

If the aircraft is cleared for stalls, they should be investigated cautiously in all configurations and types of entry. Determine the approximate stall warning margin, what defines the warning and the stall, and the aircraft characteristics in the stall and the recovery. If possible, determine the best method of breaking the stall and altitude loss in recovery from several points in the stall.

If possible, check the tactical mission capability of the aircraft. Simulated dive bombing runs or LABS maneuvers could be made for a tactical fighter for example. All the information obtainable will be helpful in writing an accurate and comprehensive report.

Fly the traffic pattern as recommended and, if fuel permits, make a go-around on the first pass. Note the power response, power required in the pattern, airspeed control and sink rate, trim changes with gear and flap extension, trimming action, buffet with gear extension, and general aircraft feel in the pattern. On the go-around, recheck the trim changes with gear and flap retraction and with drag device reaction. Don't forget to look at engine out characteristics if time and fuel permit. On the first landing in the aircraft it is probably not advisable to attempt to get the minimum landing roll. Make a normal touchdown and use normal braking action (use the drag chute if provided). Note the touchdown speed, the effects of any crosswind, directional control, nose lowering speed, etc. As with the takeoff, the normal landing roll is of more importance than the minimum possible.

Review the flight while taxiing back to the parking area. Re-evaluate the cockpit, and attempt to determine whether the aircraft will perform its design mission and is safe and comfortable to fly. Your opinion with everything fresh in mind is probably the most accurate. Put everything you remember about the flight and your impressions of the aircraft down on paper immediately after leaving the aircraft. Do this immediately and before talking to anyone about the airplane or the flight. Waiting or discussing points with other people may alter first hand impressions or cause important aspects of the flight to be forgotten.

## INITIAL FLIGHT REPORT

The test pilot's ability to qualitatively evaluate an aircraft in limited flying time is only part of the evaluation. His ability to communicate his finding is an extremely important step that must not be neglected. An "Initial Flight Report" should be written as soon as possible after the flight. At the Flight Test Center this is accomplished on the AFSC FORM 5314.

The report should express everything learned about the aircraft. A narrative form is normally used for qualitative reports. Comparisons with other aircraft can be used to assist in describing the aircraft. Take care to ensure that only aircraft familiar to most readers are used for comparison. Otherwise the comparison will mean nothing to them.

Keep in mind the purpose of the qualitative evaluation while writing the report. Mere figures are normally not enough to describe the stability of the aircraft, particularly on a qualitative evaluation since the data obtained are very limited. Analyze the aircraft's characteristics in light of its ability to perform its design mission, give opinions of the aircraft's ability to do the job and support these opinions with the facts obtained on the evaluation flights. Comment on anything personally disliked but be objective in condemning any shortcomings. Recommendations for specific changes in the aircraft are to be included in the report. The exact manner in which the aircraft should be fixed should not be specified or recommended. The test pilot's job is to evaluate the existing hardware and state what should be changed. It is then the manufacturer's responsibility to determine how to make the necessary changes.

## QUALITATIVE EVALUATION PREPARATION CHECKLIST

- \_\_\_\_\_ 1. Identify the mission in detail. (Is this newly proposed tasking, or related tasking but by a new user?)
- \_\_\_\_\_ 2. Determine a typical and complete mission profile. (A full list of all mission tasks)
  - Generic tasks
  - Primary mission tasks
  - Mission flight conditions
  - Ancillary mission tasks
- \_\_\_\_\_ 3. Accomplish a Detailed Task Analysis. (Don't slight this)
- \_\_\_\_\_ 4. Research the aircraft thoroughly.
- \_\_\_\_\_ 5. Build an evaluation profile.
  - Sortie length
  - Weather
  - Open loop "feel" of the aircraft
  - Start at the heart of the envelope
  - Mission tasks
  - Mission simulation tasks
  - Comparison tasks
  - Similar mission aircraft
  - Aircraft you are familiar with
  - Edges of the envelope
  - Problem exploration - open loop
- \_\_\_\_\_ 6. Assemble / construct the data cards
  - Leave room to write
  - Sliding scales work greatly
  - Familiar cards are easier to use
- \_\_\_\_\_ 7. Fly the evaluation.
- \_\_\_\_\_ 8. Immediately complete an initial flight report (AFSC form 5314?)
  - Do this before talking to anyone
  - Don't get distracted or have your mind cluttered
  - Write it to yourself
- \_\_\_\_\_ 9. Write / present a detailed Qual Eval report
  - Can it do the proposed mission?



# HELICOPTER AIRCRAFT DESCRIPTION

MISSIONS

AIRFRAME/MISC

EMPTY WEIGHT

MAX G.W.

ROTOR SYSTEM

FLIGHT CONT. DESC.

STAB AUG SYSTEMS

ENGINES

TYPE

MAX SHP

GOVERNING SYSTEMS

SYSTEMS

MISSIONS

AIRFRAME/MISC

EMPTY WEIGHT

MAX G.W.

ROTOR SYSTEM

FLIGHT CONT. DESC.

STAB AUG SYSTEMS

ENGINES

TYPE

MAX SHP

GOVERNING SYSTEMS

SYSTEMS

T/O TIME FUEL G.W. C.G.  
LAND TIME FUEL G.W. C.G.  
WEATHER OAT P.HT  
WIND TURB

PREFLIGHT (EASE/TIME TAKEN)

COCKPIT LAYOUT (INITIAL IMPRESSIONS, LOGICAL, COMFORT, CONTROLS, VIEW, WARNING/EMERG. SYSTEMS)

START UP (CHECK SEQUENCE, COMPLICATIONS, ETC.)

MECHANICAL CHARACTERISTICS

CYC(LONG) CYC(LAT) COLL RUDD

FREEPLAY

B'OUT

FRICTION

F/GRADIENT

DYNAMICS

TRIM

MISSION RELATED TASKS

(Carry out on way to operating area, as possible, to determine potential F.Q. problem areas).

ROTOR ENGAGEMENT (EASE, VIBRATION, ETC.)

PRE TAKE-OFF DRILLS

GROUND HANDLING

TAXI (EASE)

BRAKES (EFFECTIVENESS)

TURNING RADIUS

VERTICAL LIFT OFF

HQR

ICE HOVER (QUAL. EVAL)

W/V

Ht

INTO WIND

Tq

HQR

X WIND

Tq

HQR

DOWN WIND

Tq

HQR

OGC HOVER

Tq

Nr

FUEL

TRANSITION (QUAL EVAL)

CLIMB (VFR) IAS RANGE

MAX POWER - LIMIT

IAS

Vv

FUEL

HQR

TRIMMED FLIGHT CONDITIONS (All controls & attitudes/ $\beta$ .  
General impression of linearity of control movements and  
adequacy of control margins. Trimmability)

IAS	$\delta$ LONG	LAT	COLL	RUDD	REMARKS
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____
_____	_____	_____	_____	_____	_____

#### LONGITUDINAL FLYING QUALITIES

( $V_{cruise}$  or mission relevant airspeed)

STATIC STABILITY	$u_p$	TRIM	$+\Delta V$	$-\Delta V$
IAS	_____	_____	_____	_____
LONG CYCLIC POS	_____	_____	_____	_____
LONG CONTROL FORCE	_____	_____	_____	_____
LONG TERM RESPONSE	_____	_____	_____	_____

#### SHORT TERM RESPONSE

CHARACTER \_\_\_\_\_ TIME \_\_\_\_\_ O'SHOOTS \_\_\_\_\_ DAMPING \_\_\_\_\_

#### MAN. STAB

BANK ANGLE	'G	$\delta$ LONG	$\delta$ LONG FORCE
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

#### REMARKS

#### CONTROL RESPONSE

INPUT	SENS	EFFECT	TIME (S/STATE)
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

#### REMARKS

#### LAT/DIR

#### STATIC STAB (CARRY OUT TOIC & SHSS)

#### Dihedral Effect

#### Directional Stability

#### Sideforces

#### DYNAMICS

#### SPIRAL STAB

#### DUTCH ROLL

#### Period

#### Roll/Yaw

#### Damping

#### LAT CYC CONT RESPONSE

MAX IAS (QUAL. EVAL)

V<sub>MAX</sub>

V<sub>NE</sub>

AUTO F.Q.

V<sub>MIN</sub> SINK

V<sub>V</sub>

DEGRADED MODES (STAB AUG/HYD. OFF)

STAB AUG ASST

MODE

OPERATION

LOW A/S F.Q.

TRIMMED FLIGHT CONDITIONS

SIDEWARD (L)

LIMIT

PARAMETER

SIDEWARD (R)

LIMIT

PARAMETER

REARWARD

LIMIT

PARAMETER

REMARKS

7

VERTICAL CLIMB (Max Power)

CONTROL MOVEMENTS

V<sub>V</sub>

FUEL

REMARKS

WIND

CRITICAL AZIMUTH

REL. WIND

LIMITATION

TURN ON SPOT (Qual Eval)

CONTROL RESPONSE (LONG/LAT/YAW)

INPUT

SENS

EFFECT

TIME (S/STATE)

REMARKS

DYNAMICS (LONG/LAT Pure Motions)

8

LOW A/S MISSION RELATED TASKS (NOE, Slopes, Quick Stops, etc.)

SYSTEMS EVAL. (IF RELEVANT)

SHUT DOWN

MISCELLANEOUS

THIS PAGE INTENTIONALLY BLANK

QUAL EVALUATION \_\_\_\_\_ AIRCRAFT \_\_\_\_\_

DATE \_\_\_\_\_ LOCATION \_\_\_\_\_

CONFIGURATION \_\_\_\_\_

CALL SIGN \_\_\_\_\_ OPS # \_\_\_\_\_ TAIL # \_\_\_\_\_  
G.W. \_\_\_\_\_ CG \_\_\_\_\_ % FUEL LOAD \_\_\_\_\_ GAL/LBS

**IMPORTANT MISSION LIMITATIONS**

BATTERY POWER TIME \_\_\_\_\_  
EGT Start { ICS TIME \_\_\_\_\_  
IGNITION TIME \_\_\_\_\_  
TEMP \_\_\_\_\_ ° TIME \_\_\_\_\_  
TEMP \_\_\_\_\_ ° TIME \_\_\_\_\_  
TEMP \_\_\_\_\_ ° TIME \_\_\_\_\_  
FLAP SETTING ° OR % \_\_\_\_\_

**IDLE LIMITS**

RPM \_\_\_\_\_ ± \_\_\_\_\_  
EGT \_\_\_\_\_ ± \_\_\_\_\_  
FF \_\_\_\_\_ ± \_\_\_\_\_  
OIL P. \_\_\_\_\_ ± \_\_\_\_\_  
HYD \_\_\_\_\_ ± \_\_\_\_\_  
PNEU \_\_\_\_\_ ± \_\_\_\_\_  
TORQUE \_\_\_\_\_ ± \_\_\_\_\_  
NOZ/TOP/TIT \_\_\_\_\_ ± \_\_\_\_\_

MAX CANOPY SPEED \_\_\_\_\_

MAX NGS SPEED \_\_\_\_\_

MAX TAXI SPEED \_\_\_\_\_

LINE UP CHECK

RPM \_\_\_\_\_ ± \_\_\_\_\_  
EGT \_\_\_\_\_ ± \_\_\_\_\_  
FF \_\_\_\_\_ ± \_\_\_\_\_  
OIL P. \_\_\_\_\_ ± \_\_\_\_\_  
OIL QTY \_\_\_\_\_ ± \_\_\_\_\_  
TORQUE \_\_\_\_\_ ± \_\_\_\_\_

NOZZLE \_\_\_\_\_  
TOP/TIT \_\_\_\_\_

GEAR LIMIT SPEED \_\_\_\_\_

FLAP SCHED \_\_\_\_\_ 1 \_\_\_\_\_  
\_\_\_\_\_ 2 \_\_\_\_\_

FLAP LIMIT SPEED \_\_\_\_\_

EJECTION ENVELOPE/BANK

AS/ALT \_\_\_\_\_ BK \_\_\_\_\_  
AS/ALT \_\_\_\_\_ BK \_\_\_\_\_  
AS/ALT \_\_\_\_\_ BK \_\_\_\_\_

MAXIMUM AIRSPEED \_\_\_\_\_

MAXIMUM MACH # \_\_\_\_\_

MAX G (S) \_\_\_\_\_ WT \_\_\_\_\_  
MAX G (S) \_\_\_\_\_ WT \_\_\_\_\_  
MAX G (S) \_\_\_\_\_ WT \_\_\_\_\_  
MAX G (A) \_\_\_\_\_ WT \_\_\_\_\_  
MAX G (A) \_\_\_\_\_ WT \_\_\_\_\_

**ENGINE LIMITS**

	MIL	MAX
RPM	_____ %	_____ %
EGT	_____ °	_____ °
FF	_____	_____
OIL P	_____	_____
TORQUE	_____	_____
TOP/TIT	_____	_____
RPM OVERSPEED	_____	_____

AOA \_\_\_\_\_ AOA \_\_\_\_\_

LOAD/VOLT MTRS \_\_\_\_\_ ± \_\_\_\_\_

CG LIMITS % \_\_\_\_\_ TO \_\_\_\_\_

STORE LIMITS

AIRSPEED \_\_\_\_\_

G LIMIT \_\_\_\_\_ S \_\_\_\_\_ A \_\_\_\_\_

JETTISON \_\_\_\_\_

ZERO G. LIMITS

NEGATIVE G. LIMIT

**PROHIBITED MANEUVERS**

1 \_\_\_\_\_  
2 \_\_\_\_\_  
3 \_\_\_\_\_  
4 \_\_\_\_\_

NG LIFT OFF \_\_\_\_\_

MAIN GEAR T/O \_\_\_\_\_

FIGURE 1. TYPICAL AIRCRAFT QUALITATIVE EVALUATION FLIGHT CARD  
COVER PAGE



COVER  
CARDSQUAL EVALUATION

AIRCRAFT \_\_\_\_\_

DATE \_\_\_\_\_

LOCATION \_\_\_\_\_

CONFIGURATION \_\_\_\_\_

CALL SIGN \_\_\_\_\_ OPS# \_\_\_\_\_ TAIL# \_\_\_\_\_

GW. \_\_\_\_\_ CG \_\_\_\_\_

FUEL: \_\_\_\_\_ HRS FOB \_\_\_\_\_ JOKER \_\_\_\_\_

NORM \_\_\_\_\_

MIN \_\_\_\_\_

EMER \_\_\_\_\_

BINGO \_\_\_\_\_

WEATHER: SKY \_\_\_\_\_ VIS \_\_\_\_\_ TEMP \_\_\_\_\_ WINDS \_\_\_\_\_ PA \_\_\_\_\_

WIND ALDFT (DIR/VEL/TEMP)

5 \_\_\_\_\_ 25 \_\_\_\_\_

10 \_\_\_\_\_ 30 \_\_\_\_\_

15 \_\_\_\_\_ 35 \_\_\_\_\_

20 \_\_\_\_\_ 40 \_\_\_\_\_

FRZ LVL \_\_\_\_\_

TOD \_\_\_\_\_

VALID TIME \_\_\_\_\_



- A. Support Equipment
  - 1. Power Unit
    - Type
    - Capacity
  - 2. Other
- B. Cargo Compartment
  - 1. Entrance
  - 2. Egress
  - 3. Systems Accessibility
  - 4. Other
- C. Flight Deck
  - 1. Crew Stations
    - a. Pilot
      - Seat Adjustment
      - Clearance
      - Vision
      - Rudder
      - Pedal Adjustment
      - Restrictions
      - Other
    - b. Copilot
    - c. Flight Mechanic
    - d. Navigator
  - 2. Instrument Panel
    - a. Flight Instruments
      - Grouping
      - Readability
      - Adequacy
    - b. Engine Instruments
      - Grouping
      - Readability
      - Adequacy
    - c. Warning Lights
      - Placards
      - Switches
      - Controls
  - 3. Pedestal
    - a. Engine Controls
      - System Controls
      - Switches
      - Guards
      - Placards
      - Lights
      - Feel Identification
      - Accessibility
      - Confusion Factor
      - Arrangement
    - b. Remarks
  - 4. Overhead Panel
    - a. Engine Controls
      - System Controls
      - Switches
      - Guards
      - Lights
      - Placards
      - Accessibility
      - Feel Identification
      - Confusion Factor
      - Arrangement
    - b. Remarks
  - 5. Side Panels
    - a. Switches
      - CBs
      - Lights
    - b. Remarks
  - 6. Flight Controls
    - a. Rudder
      - Break-out Force
      - Travel
      - Adjustment
      - Clearance
      - Slop
      - Friction
    - b. Elevator
      - Break-out Force
      - Travel
      - Slop
      - Friction
      - Clearance
    - c. Control Wheel
      - Aileron Break-out Force
      - Travel
      - Slop
      - Friction
      - Clearance
      - Grip
      - Switches
  - 7. General Comments

FIGURE 2. TYPICAL LARGE AIRCRAFT QUALITATIVE EVALUATION FLIGHT CARDS

5. Vibration
    - a. Noise
    - b. Air vent deflectors
    - c. Ventilation/heating
  6. Control Required To Maintain Proper Taxi Speed
  7. Remarks:
- D. Pre-Take-Off (line up at even 1,000 feet and check W/V)
1. Flight Control Check With Boost Operating
    - a. b/o force
    - b. rate
    - c. deflection
    - d. stop
    - e. friction
  2. Flaps Set \_\_\_\_\_ Trim Set \_\_\_\_\_
  3. Engine Power Check
    - a. Acceleration
      - Idle \_\_\_\_\_ to \_\_\_\_\_ (MRP) \_\_\_\_\_ Sec.
      - Asymmetric \_\_\_\_\_
      - Overshoot \_\_\_\_\_
    - b. Stabilized conditions: OAT \_\_\_\_\_

Eng	% RPM	Torque	TIT	Throttle Pos
1				
2				
3				
4				
  4. Brakes Hold At MIL PWR
  5. Fuel reading \_\_\_\_\_ lbs. W/V \_\_\_\_\_ kts.
- E. Take-Off. (Use flight data on knee board)
1. Start Time Form BRAKE RELEASE TO START CLIMB \_\_\_\_\_
  2. Brake Release Action
  3. Directional Control. Rudder Effective \_\_\_\_\_ kts.
  4. Elevator Effective (nose wheel off) \_\_\_\_\_ kts.
  5. Aileron Control \_\_\_\_\_ kts.
  6. T.O. Distance \_\_\_\_\_ ft. Lift-Off Speed \_\_\_\_\_ kts. Time \_\_\_\_\_ sec.
  7. Control Force \_\_\_\_\_ Pitch \_\_\_\_\_ Trim \_\_\_\_\_
  8. Trim-Out - Raise Gear
    - Time \_\_\_\_\_ sec.
    - Yaw \_\_\_\_\_
    - Trim \_\_\_\_\_
  9. Trim-Out - Raise Flaps
    - Time \_\_\_\_\_ sec.
    - Trim \_\_\_\_\_
  10. Acceleration to MINIMUM CONTROL SPEED
  11. Acceleration to Climb Speed (1,000 ft)
  12. Visibility and Pitch Angle \_\_\_\_\_
  13. Remarks:

FIGURE 2. TYPICAL LARGE AIRCRAFT QUALITATIVE EVALUATION FLIGHT CARDS  
(CONTINUED)

F. Climb (M N \_\_\_\_\_°, 90° to W/V).

1. Visibility \_\_\_\_\_

Pitch Angle \_\_\_\_\_

2. Record: FUEL at START CLIMB \_\_\_\_\_

TIME	Hi	Vi	R/C	Ti	% RPM	TORQUE	TPT	Wf
_____	4M	_____	_____	_____	_____	_____	_____	_____
_____	6M	_____	_____	_____	_____	_____	_____	_____
_____	8M	_____	_____	_____	_____	_____	_____	_____
_____	10M	_____	_____	_____	_____	_____	_____	_____
_____	12M	_____	_____	_____	_____	_____	_____	_____
_____	14M	_____	_____	_____	_____	_____	_____	_____
_____	16M	_____	_____	_____	_____	_____	_____	_____
_____	18M	_____	_____	_____	_____	_____	_____	_____
_____	20M	_____	_____	_____	_____	_____	_____	_____
_____	22M	_____	_____	_____	_____	_____	_____	_____
_____	24M	_____	_____	_____	_____	_____	_____	_____
_____	26M	_____	_____	_____	_____	_____	_____	_____
_____	28M	_____	_____	_____	_____	_____	_____	_____
_____	30M	_____	_____	_____	_____	_____	_____	_____
_____	32M	_____	_____	_____	_____	_____	_____	_____

FUEL at LEVEL-OFF \_\_\_\_\_

3. Check Cabin Pressurization:

10M \_\_\_\_\_

15M \_\_\_\_\_

20M \_\_\_\_\_

25M \_\_\_\_\_

30M \_\_\_\_\_ Note any fluctuations or surges.

4. Cabin Heat Adequacy

a. Nesl glass \_\_\_\_\_

5. Remarks \_\_\_\_\_

G. Cruise

1. Vmax

a. Hi \_\_\_\_\_

b. Vi \_\_\_\_\_

c. OAT \_\_\_\_\_

d. Flt. Controls \_\_\_\_\_

e. RPM \_\_\_\_\_

f. Torque \_\_\_\_\_

g. TIT \_\_\_\_\_

h. Wf \_\_\_\_\_

i. FUEL \_\_\_\_\_

FIGURE 2. TYPICAL LARGE AIRCRAFT QUALITATIVE EVALUATION FLIGHT CARDS  
(CONTINUED)

2. Dynamics (Hi \_\_\_\_\_ Vi \_\_\_\_\_) Note Control Position
- a. Phugoid
1. Trim \_\_\_\_\_  $V_{In}$  \_\_\_\_\_  $V_{max}$  \_\_\_\_\_  $V_{min}$  \_\_\_\_\_
  2. Sec/cyc \_\_\_\_\_  $^{\circ}$  \_\_\_\_\_ Damping \_\_\_\_\_
- b. Porpoise Mode. input \_\_\_\_\_ cycls \_\_\_\_\_ ampl. \_\_\_\_\_
- c. Spiral stability
1. RT  $\phi$  10 $^{\circ}$  \_\_\_\_\_  $^{\circ}$ /\_\_\_\_\_ sec.
  2. LFT " " \_\_\_\_\_  $^{\circ}$ /\_\_\_\_\_ sec.
  3. Remarks:
- d. Dutch Roll
1. RT sideslip s/c \_\_\_\_\_ Roll \_\_\_\_\_ Yaw \_\_\_\_\_  
Damping \_\_\_\_\_ (1) \_\_\_\_\_ (2) \_\_\_\_\_ (3) \_\_\_\_\_
  2. LFT sideslip s/c \_\_\_\_\_ Roll \_\_\_\_\_ Yaw \_\_\_\_\_  
Damping \_\_\_\_\_ (1) \_\_\_\_\_ (2) \_\_\_\_\_ (3) \_\_\_\_\_
  3. (1) Norm (2) Damper Off (3) Rudder Power Off.
- e. Short Period
1. Fixed (1.0g) Damping \_\_\_\_\_
  2. Fixed (-1.0g) Damping \_\_\_\_\_
  3. Free (1.0g) Damping \_\_\_\_\_
  4. Free (-1.0g) Damping \_\_\_\_\_
  5. Remarks:
3. Maximum Range Data
- a. Hi \_\_\_\_\_ Vi \_\_\_\_\_ OAT \_\_\_\_\_ FUEL \_\_\_\_\_
- b. RPM \_\_\_\_\_ Torque \_\_\_\_\_ TPT \_\_\_\_\_ Wf \_\_\_\_\_
- c. Remarks:
4. Systems Check: Hi \_\_\_\_\_ Vi \_\_\_\_\_
- a. Engine shut-down, No. \_\_\_\_\_
1. Time to feather \_\_\_\_\_ Control force \_\_\_\_\_
  2. Procedure, etc:
- b. Engine restart
1. Time to Normal power \_\_\_\_\_ Surge \_\_\_\_\_ Trim \_\_\_\_\_
  2. Procedure, etc:
- c. Anti-icing/de-icing system
1. Full operation effect on engines \_\_\_\_\_
  2. Nesi glass  
Other \_\_\_\_\_
  3. Remarks:
- d. GTU/ATM operation \_\_\_\_\_
- e. Pressurization/heating \_\_\_\_\_
- f. Other:
5. Emergency Descent, Hi \_\_\_\_\_ Vi \_\_\_\_\_ (Initial)
- a. Time from cruise to start descent \_\_\_\_\_
- b. Procedure: G and F \_\_\_\_\_ Clean \_\_\_\_\_ Pressurization \_\_\_\_\_
- c. Time \_\_\_\_\_ from CR to HI \_\_\_\_\_ at Vi \_\_\_\_\_
- d. Visibility \_\_\_\_\_ Pitch \_\_\_\_\_ Control \_\_\_\_\_
- e. Remarks:

FIGURE 2. TYPICAL LARGE AIRCRAFT QUALITATIVE EVALUATION FLIGHT CARDS  
(CONTINUED)

6. Static Longitudinal Stability and Performance HI \_\_\_\_\_

a. Acceleration check Trim at Max Range Vi \_\_\_\_\_

1. Decel to Vi \_\_\_\_\_ Control Force \*(Trim setting) \_\_\_\_\_
2. Speed/Pwr Vi \_\_\_\_\_ RPM \_\_\_\_\_ Tq \_\_\_\_\_ TIT \_\_\_\_\_ OAT \_\_\_\_\_  
Speed/Pwr Vi \_\_\_\_\_ RPM \_\_\_\_\_ Tq \_\_\_\_\_ TIT \_\_\_\_\_
3. Acceleration, (RESET TRIM), Time/10 kts (MRP) Initial Vi \_\_\_\_\_  
10 \_\_\_\_\_  
20 \_\_\_\_\_  
30 \_\_\_\_\_  
40 \_\_\_\_\_  
50 \_\_\_\_\_  
60 \_\_\_\_\_  
70 \_\_\_\_\_  
80 \_\_\_\_\_  
V/S \_\_\_\_\_ ft/min. Control forces/gradient \_\_\_\_\_
4. Remarks: \_\_\_\_\_ FUEL \_\_\_\_\_

b. Trim Changes: Hi \_\_\_\_\_ Vi \_\_\_\_\_

1. Control boost off \_\_\_\_\_ on \_\_\_\_\_
2. Runaway Trim: Elev \_\_\_\_\_ Ail \_\_\_\_\_ Rud \_\_\_\_\_  
5 sec delay (build-up) \_\_\_\_\_

c. Turning Performance and Aileron Rolls. Cruise. (Build-up). FULL DEFLECT

1. 60° Ø, Time 360° \_\_\_\_\_ V<sub>max</sub> \_\_\_\_\_ Hi \_\_\_\_\_
2. 45° Lft - 45° Rt (FIX) Time for 90° \_\_\_\_\_
3. 45° Rt - 45° Lft (FIX) Time for 90° \_\_\_\_\_
4. 60° Ø, Time 360° \_\_\_\_\_ Vi \_\_\_\_\_ Hi \_\_\_\_\_
5. 45° Lft - 45° Rt (FIX) Time for 90° \_\_\_\_\_
6. 45° Rt - 45° Lft (FIX) Time for 90° \_\_\_\_\_
7. 60° Ø, Time 360° \_\_\_\_\_ Vi \_\_\_\_\_ Hi \_\_\_\_\_
8. 45° Lft - 45° Rt \_\_\_\_\_ (FIX) Time for 90° \_\_\_\_\_
9. 45° Rt - 45° Lft (FIX) Time for 90° \_\_\_\_\_  
POWER APPROACH
10. 45° Lft - 45° Rt (FIX) Time for 90° \_\_\_\_\_
11. 45° Rt - 45° Lft (FIX) Time for 90° \_\_\_\_\_

d. Spiral Stability PA Hi \_\_\_\_\_ Vi \_\_\_\_\_ Pwr \_\_\_\_\_

1. Rt Ø 10° \_\_\_\_\_°/\_\_\_\_\_ sec. (½ - 2).
2. Lft 10° \_\_\_\_\_°/\_\_\_\_\_ sec. (½ - 2).

e. Phugoid (Hi C<sub>L</sub>) \_\_\_\_\_

f. Sideslips, TRIM (L) Hi \_\_\_\_\_ Vi \_\_\_\_\_

1. Rt \_\_\_\_\_°, Fr \_\_\_\_\_ Fa \_\_\_\_\_ Fs \_\_\_\_\_ dr \_\_\_\_\_ da \_\_\_\_\_ de \_\_\_\_\_
2. Lft \_\_\_\_\_°, Fr \_\_\_\_\_ Fa \_\_\_\_\_ Fs \_\_\_\_\_ dr \_\_\_\_\_ da \_\_\_\_\_ de \_\_\_\_\_  
TRIM (CR) Hi \_\_\_\_\_ Vi \_\_\_\_\_
3. Rt \_\_\_\_\_°, Fr \_\_\_\_\_ Fa \_\_\_\_\_ Fs \_\_\_\_\_ dr \_\_\_\_\_ da \_\_\_\_\_ de \_\_\_\_\_
4. Lft \_\_\_\_\_°, Fr \_\_\_\_\_ Fa \_\_\_\_\_ Fs \_\_\_\_\_ dr \_\_\_\_\_ da \_\_\_\_\_ de \_\_\_\_\_
5. D.E. with rudder (Pick up wing) \_\_\_\_\_
6. Remarks: \_\_\_\_\_ FUEL \_\_\_\_\_

7. Stalls, Gross Weight \_\_\_\_\_ Hi Trim \_\_\_\_\_

- a. CR 1.0g TRIM Vi \_\_\_\_\_ Vw \_\_\_\_\_ Vs \_\_\_\_\_ Hi \_\_\_\_\_
- b. CR 2.0g TRIM Vi \_\_\_\_\_ Vw \_\_\_\_\_ Vs \_\_\_\_\_ Hi \_\_\_\_\_
- c. Remarks: \_\_\_\_\_
- d. PA 1.0g TRIM Vi \_\_\_\_\_ Vw \_\_\_\_\_ Vs \_\_\_\_\_ Hi \_\_\_\_\_
- b. PA 1.5g TRIM Vi \_\_\_\_\_ Vw \_\_\_\_\_ Vs \_\_\_\_\_ Hi \_\_\_\_\_

FIGURE 2. TYPICAL LARGE AIRCRAFT QUALITATIVE EVALUATION FLIGHT CARDS (CONTINUED)

8. Asymmetric Power - III \_\_\_\_\_
- Climb configuration (MRP, Climb VI, Trimmed-out)  
NTC \_\_\_\_\_ Feather \_\_\_\_\_ No. 1 Eng. Rudder Free, 2 sec.  
Decel to 1.4 Vsl \_\_\_\_\_ kts.  $\emptyset$  and sideslip  
(Cond. permitting check 2 out on one side)
  - T.O. Configuration at  $V_{max}$  Gear and T.O. Flaps (168 kts.)  
Fail 1 and 2 and decelerate holding  $\emptyset = \text{ZERO}$ .  
 $V_{min}$  \_\_\_\_\_ Check  $\emptyset = 5^\circ$  and SIDESLIP = ZERO.
  - AT Min control speed fail 3 and 4, Fr \_\_\_\_\_ Fa \_\_\_\_\_  
Fs \_\_\_\_\_ TRIM OUT HANDS OFF AT 1, 2 Vsl \_\_\_\_\_
  - Remarks:
9. Boost OFF Operation Hi \_\_\_\_\_ Vi \_\_\_\_\_ Pwr \_\_\_\_\_
- Asymmetric Control 1 and 2 idle, 3 and 4 MRP
  - Response \_\_\_\_\_ Fr \_\_\_\_\_ Fa \_\_\_\_\_ Fs \_\_\_\_\_
  - Remarks:
10. Descent
- CR Configuration Vi \_\_\_\_\_ V/S \_\_\_\_\_  
1. Visibility \_\_\_\_\_ Attitude \_\_\_\_\_  
2. Engine operation at idle \_\_\_\_\_  
3. Pressurization, systems, etc. \_\_\_\_\_  
4. Remarks:
  - L Configuration Vi \_\_\_\_\_ V/S \_\_\_\_\_  
1. Visibility \_\_\_\_\_ Attitude \_\_\_\_\_  
2. Engine operation at idle \_\_\_\_\_  
3. Remarks:
11. Trim Changes Trim at Placard Speed, PLF
- Flaps to 50% VI \_\_\_\_\_ HI \_\_\_\_\_ PLF/Trim
  - Gear DOWN VI \_\_\_\_\_ HI \_\_\_\_\_ PLF/Trim
  - Flaps to 100% VI \_\_\_\_\_ HI \_\_\_\_\_ PLF/Trim
  - Power to IDLS VI \_\_\_\_\_ HI \_\_\_\_\_ Trim
  - Idle to HRP VI \_\_\_\_\_ Att \_\_\_\_\_ Trim
  - Gear UP VI \_\_\_\_\_ V/S \_\_\_\_\_ Trim
  - Flaps UP VI \_\_\_\_\_ V/S \_\_\_\_\_ Trim
12. Asymmetric Power Go-around
- Out, Pa Vi \_\_\_\_\_ HI \_\_\_\_\_ Pwr \_\_\_\_\_
  - Fr \_\_\_\_\_ Fa \_\_\_\_\_ Fe \_\_\_\_\_ Response and Control
  - Remarks:
13. General Comments Prior to Completion of Flying.

FIGURE 2. TYPICAL LARGE AIRCRAFT QUALITATIVE EVALUATION FLIGHT CARDS  
(CONTINUED)

**H. Approach and Landing**

1. Pre-landing check: Operating Weight \_\_\_\_\_  
Alt Setting \_\_\_\_\_ Fuel Weight \_\_\_\_\_  
W/V \_\_\_\_\_ Landing GR WT \_\_\_\_\_  
Runway \_\_\_\_\_ Best Flare Speed \_\_\_\_\_  
(Pilot Pwr and Steer) Touchdown speed \_\_\_\_\_  
(Copilot Allersons) VS<sub>L</sub> \_\_\_\_\_
2. Traffic pattern:
  - a. Visibility \_\_\_\_\_ Control \_\_\_\_\_
  - b. Power response \_\_\_\_\_
  - c. Remarks: \_\_\_\_\_
3. Landing:
  - a. Flare \_\_\_\_\_ Response \_\_\_\_\_ Control \_\_\_\_\_
  - b. Float \_\_\_\_\_ Characteristics in ground effect \_\_\_\_\_
  - c. Touchdown \_\_\_\_\_ Nose-wheel off \_\_\_\_\_ Grd idle \_\_\_\_\_  
Reverse \_\_\_\_\_ Brakes \_\_\_\_\_ Steering \_\_\_\_\_
  - d. Directional control with ailerons \_\_\_\_\_
  - e. Stopping distance \_\_\_\_\_
4. Remarks: \_\_\_\_\_

**I. Post-flight and Shut-down**

1. Normal procedures. Ease and time to accomplish \_\_\_\_\_
2. Coordination \_\_\_\_\_
3. Fuel \_\_\_\_\_
4. Flight Time \_\_\_\_\_
5. Squawks \_\_\_\_\_

**J. Re-evaluate Cockpit and A/C in General**

FIGURE 2. TYPICAL LARGE AIRCRAFT QUALITATIVE EVALUATION FLIGHT CARDS  
(CONTINUED)



**EXTERNAL INSPECTION**

**TOD START** \_\_\_\_\_

**TOD FINISH** \_\_\_\_\_

**Remarks:**

\_\_\_\_\_

**COCKPIT EVALUATION**

**1. Ease of Entry**

**Ladder** \_\_\_\_\_

**Steps** \_\_\_\_\_

**2. Location of Instruments and Controls**

**3. Adjustment of Seat and Controls**

**4. Comfort**

**5. Ease of Identification of:**

Switches

Controls

Emergency Devices

Warning Lights

**6. Egress - ground and Airborne**

**BEFORE STARTING CHECKS**

**TOD** \_\_\_\_\_

**Remarks**

**Complexity:**

FIGURE 3. TYPICAL FIGHTER AIRCRAFT QUALITATIVE EVALUATION FLIGHT CARDS  
(2 hour flight)

**STARTING ENGINES**

Fuel \_\_\_\_\_ TOD \_\_\_\_\_

Complexity:

Ground Support:

Equipment \_\_\_\_\_

Personnel \_\_\_\_\_

**BEFORE TAXI CHECKS**

TOD \_\_\_\_\_

Estimated Break-out Force

Longitudinal + \_\_\_\_\_ # - \_\_\_\_\_ #

Lateral + \_\_\_\_\_ # - \_\_\_\_\_ #

Directional + \_\_\_\_\_ # - \_\_\_\_\_ #

Trim rate (Longitudinal) Aft \_\_\_\_\_ Sec

Fore \_\_\_\_\_ Sec

Flap Extension \_\_\_\_\_ sec Retraction \_\_\_\_\_ sec

**TAXIING**

Fuel \_\_\_\_\_ TOD \_\_\_\_\_

RPM req to move \_\_\_\_\_

Visibility

Steering

N.W.S.

Brakes

Visibility

Power required \_\_\_\_\_ RPM, fuel/flow \_\_\_\_\_ pph

Runway temp \_\_\_\_\_ °F. P.A. \_\_\_\_\_ ft.

FIGURE 3. TYPICAL FIGHTER AIRCRAFT QUALITATIVE EVALUATION FLIGHT CARDS  
(2 hour flight) (CONTINUED)

**TAKEOFF**

Fuel \_\_\_\_\_ #TOD \_\_\_\_\_

Do brakes hold in MIL PWR      Yes      No

Symmetry of brake release

Directional control

Rudder effective speed \_\_\_\_\_ knots

Ease of rotation

Lift-off speed \_\_\_\_\_ knots

Estimated T/O distance \_\_\_\_\_ feet

Gear up time \_\_\_\_\_ sec Flaps up time \_\_\_\_\_ sec

Trim changes    Landing gear + - \_\_\_\_\_ #

Flaps + - \_\_\_\_\_ #

Are placards hard to exceed?      Yes      No

Visibility during T/O and Initial Climb

Adequacy of T/O trim setting:

Speed stability during acceleration:

**CLIMB**

Fuel \_\_\_\_\_ #TOD \_\_\_\_\_

Control during climb

Longitudinal

Directional

Lateral

Climb Schedule

5000 ft.	.89IMN	550
10000 ft.	.89IMN	510
15000 ft.	.90IMN	470
20000 ft.	.905IMN	430
25000 ft.	.910IMN	390
30000 ft.	.915IMN	360
35000 ft.	.92IMN	320
39000 ft.	.92IMN	

FIGURE 3. TYPICAL FIGHTER AIRCRAFT QUALITATIVE EVALUATION FLIGHT CARDS  
(2 hour flight) (CONTINUED)

LEVEL OFF Fuel \_\_\_\_\_ #TOD \_\_\_\_\_

EASE

Attitude Change \_\_\_\_\_ °

\*\*\*\*\*

CRUISE 90% RPM .86IMN (recommended cruise)

Start Fuel \_\_\_\_\_ # TOD \_\_\_\_\_

Linear?

Sideslip:  $C_{l\beta}$  Hvy Med Lt Yes No

$C_{n\beta}$  Hvy Med Lt Yes No

Dutch Roll Period \_\_\_\_\_ sec

Damping Hvy Med Lt

Cycles to Damp \_\_\_\_\_

CRUISE cont. 39,000 ft. .86IMN

PIO Tendency Yes No

Short Period Cycles to Damp \_\_\_\_\_

Period \_\_\_\_\_ sec

Do controls have dynamic tendency?

Yes No

Aileron Rolls: t90

R L Adv. Yaw

1/2 deflection \_\_\_\_\_ sec \_\_\_\_\_ sec

Full deflect. \_\_\_\_\_ sec \_\_\_\_\_ sec

\*\*\*\*\* DAMPERS OFF \*\*\*\*\*

Linear?

Sideslip:  $C_{l\beta}$  Hvy Med Lt Yes No

$C_{n\beta}$  Hvy Med Lt Yes No

Dutch Roll: Period \_\_\_\_\_ sec

Damping Hvy Med Lt

Cycles to Damp \_\_\_\_\_

PIO Tendency Yes No

Short Period: Cycles to Damp \_\_\_\_\_

Period \_\_\_\_\_ sec

FIGURE 3. TYPICAL FIGHTER AIRCRAFT QUALITATIVE EVALUATION FLIGHT CARDS (2 hour flight) (CONTINUED)

\*\*\*\*\* DAMPERS ON \*\*\*\*\*

Finish: Fuel \_\_\_\_\_ # TOD \_\_\_\_\_

Speed brake trim change Hvy Med Lt

Extend Push Pull

Retract Push Pull

MANEUVERING FLIGHT .9 IMN 39-35,000 ft.

Fuel \_\_\_\_\_ #

Initial buffet \_\_\_\_\_ g

Heavy buffet \_\_\_\_\_ g  $n_{max}$  \_\_\_\_\_ g

Stick force Hvy Med Lt

Linear Yes No

\*\*\*\*\*

ACCELERATION TO 1.2 IMN at 35,000 ft. (trim .9 IMN)

Start: Fuel \_\_\_\_\_ # TOD \_\_\_\_\_

NB Light L \_\_\_\_\_ sec R \_\_\_\_\_ sec

NB Trim Change \_\_\_\_\_ # Push Pull

Stick force gradient \_\_\_\_\_

Transonic trim change \_\_\_\_\_

Finish fuel \_\_\_\_\_ # TOD \_\_\_\_\_

\*\*\*\*\*

CRUISE 1.15 IMN 35,000 ft.

Start Fuel \_\_\_\_\_ # TOD \_\_\_\_\_

Linear?

Sideslip:  $C_{l\beta}$  Hvy Med Lt Yes No

$C_{n\beta}$  Hvy Med Lt Yes No

Dutch Roll: Period \_\_\_\_\_ sec

Damping Hvy Med Lt

Cycles to Damp \_\_\_\_\_

PIO Tendency Yes No

FIGURE 3. TYPICAL FIGHTER AIRCRAFT QUALITATIVE EVALUATION FLIGHT CARDS  
(2 hour flight) (CONTINUED)

CRUISE cont 1.15 IMN 35,000 ft.

Short Period: Cycles to Damp \_\_\_\_\_  
 Period \_\_\_\_\_ sec

\*\*\*\*\* DAMPERS OFF \*\*\*\*\*

Linear?

Sideslip:  $C_{l\beta}$  Hvy Med Lt Yes No  
 $C_{n\beta}$  Hvy Med Lt Yes No

Dutch Roll: Period \_\_\_\_\_ sec  
 Damping Hvy Med Lt  
 Cycles to Damp \_\_\_\_\_

PIO Tendency Yes No

Short Period: Cycles to Damp \_\_\_\_\_  
 Period \_\_\_\_\_ sec

\*\*\*\*\* DAMPERS ON \*\*\*\*\*

Alleron Rolls: t 90 Adverse Yaw  
 R L

$\frac{1}{2}$  deflection \_\_\_\_\_ sec \_\_\_\_\_ sec  
 Full deflect. \_\_\_\_\_ sec \_\_\_\_\_ sec

Finish: Fuel \_\_\_\_\_ TOD \_\_\_\_\_

\*\*\*\*\*  
 SPEED BRAKE TRIM CHANGE 1.15-1.1 IMN

Hvy Med Lt  
 Extend Push Pull  
 Retract Push Pull

MANEUVERING FLIGHT 1.1 IMN 35-35,000 ft.

Fuel \_\_\_\_\_ #  
 Initial buffet \_\_\_\_\_ g Heavy buffet \_\_\_\_\_ g  
 $n_{max}$  \_\_\_\_\_ g  
 Stick force Hvy Med Lt  
 Linear? Yes No

FIGURE 3. TYPICAL FIGHTER AIRCRAFT QUALITATIVE EVALUATION FLIGHT CARDS  
 (2 hour flight) (CONTINUED)

DECELERATION TO 210 knots 30,000 ft. (Long Stat)

Stick Force gradient \_\_\_\_\_

\*\*\*\*\*

CRUISE 210 knots 30,000 ft.

Start: Fuel \_\_\_\_\_ # TOD \_\_\_\_\_

Linear?

Sideslips:  $C_{l\beta}$  Hvy Med Lt Yes No  
 $C_{n\beta}$  Hvy Med Lt Yes No

Dutch Rolls: Period \_\_\_\_\_ sec  
Damping Hvy Med Lt  
Cycles to Damp \_\_\_\_\_

PIO Tendency Yes No

Short Periods: Cycles to Damp \_\_\_\_\_  
Period \_\_\_\_\_ sec

\*\*\*\*\* DAMPERS OFF \*\*\*\*\*

Linear?

Sideslips:  $C_{l\beta}$  Hvy Med Lt Yes No  
 $C_{n\beta}$  Hvy Med Lt Yes No

CRUISE 210 knots at 30,000 ft.

Dutch Roll: Period \_\_\_\_\_ sec  
Damping Hvy Med Lt  
Cycles to Damp \_\_\_\_\_

PIO Tendency Yes No

Short Periods: Cycles to Damp \_\_\_\_\_  
Period \_\_\_\_\_ sec

Finish: Fuel \_\_\_\_\_ # TOD \_\_\_\_\_

FIGURE 3. TYPICAL FIGHTER AIRCRAFT QUALITATIVE EVALUATION FLIGHT CARDS  
(2 hour flight) (CONTINUED)

\*\*\*\*\* DAMPERS ON \*\*\*\*\*

**AILERON ROLLS** t90 Adverse Yaw

1/2 deflection R \_\_\_\_\_ sec L \_\_\_\_\_ sec

Full deflect. R \_\_\_\_\_ sec L \_\_\_\_\_ sec

\*\*\*\*\*

**MANEUVERING FLIGHT at 210 knots**

Fuel \_\_\_\_\_ #

Initial Buffet \_\_\_\_\_ g Heavy Buffet \_\_\_\_\_ g

"max" \_\_\_\_\_ g

Stick force gradient: Hvy Med Lt

\*\*\*\*\*

**STALLS** Cruise Configuration 25,000 ft.

Fuel \_\_\_\_\_ #

Cr Vw \_\_\_\_\_ knots Vs \_\_\_\_\_ knots

GLIDE Vw \_\_\_\_\_ knots Vs \_\_\_\_\_ knots

Remarks

**POWER APPROACH CONFIGURATION**

Gear extension \_\_\_\_\_ sec

Flap extension \_\_\_\_\_ sec

Asymmetric power at 155 knots

MIL RWR Rudder Force Hvy Med Lt

MAX TWR Rudder Force Hvy Med Lt

Trimability MIL \_\_\_\_\_ MAX

**STALLS:** Fuel \_\_\_\_\_

Vw \_\_\_\_\_ knots Vs \_\_\_\_\_ knots

Remarks:

FIGURE 3. TYPICAL FIGHTER AIRCRAFT QUALITATIVE EVALUATION FLIGHT CARDS  
(2 hour flight) (CONTINUED)

Trim at 160 knots

							Linear?
Sideslip:	$C_{l\beta}$	Hvy	Med	Lt	Yes	No	
	$C_{n\beta}$	Hvy	Med	Lt	Yes	No	
Dutch Roll:	Period	_____ sec					
	Damping	Hvy	Med	Lt			
	Cycles to Damp	_____					
PIO Tendency	Yes	No					
Short Period:	Cycles to Damp	_____					
	Period	_____ sec					

\*\*\*\*\* DAMPERS OFF \*\*\*\*\*

Dutch Roll:	Period	_____ sec					
	Damping	Damping	Hvy	Med	Lt		
	Cycles to Damp	_____					
PIO Tendency	Yes	No					
Short Period:	Cycles to Damp	_____					
	Period	_____ sec					

\*\*\*\*\* DAMPERS ON \*\*\*\*\*

AILERON ROLLS		t90		Adverse Yaw
1/2 deflection	R _____ sec	L _____ sec		
Full deflect	R _____ sec	L _____ sec		

\*\*\*\*\*

#### ACROBATICS

Loop  
Immelman  
Barrel Roll

FIGURE 3. TYPICAL FIGHTER AIRCRAFT QUALITATIVE EVALUATION FLIGHT CARDS (2 hour flight) (CONTINUED)

### INSTRUMENTS

Holding at 20,000 ft.	250 knots	90-92%
Penetration S/B	270 knots	90%
Initial Clean	220 knots	94%
Low Cone gear, 86%, flaps, 155 knots		

### LANDING

Normal traffic pattern 60% flaps  
Single engine go-around closed pattern  
Full stop Full flaps

Touchdown speed \_\_\_\_\_ knots' marker \_\_\_\_\_

\*\*\*\*\*

### TAXIING

Fuel \_\_\_\_\_ #TOD \_\_\_\_\_

Engine acceleration Idle to mil \_\_\_\_\_ sec

Turning radius \_\_\_\_\_ feet

Re-evaluate cockpits

### ENGINE SHUTDOWN

Check servicing for turn-around

Time \_\_\_\_\_

Oil \_\_\_\_\_ qts

Hydraulic fluid \_\_\_\_\_ qts

LOX \_\_\_\_\_ liters

FIGURE 3. TYPICAL FIGHTER AIRCRAFT QUALITATIVE EVALUATION FLIGHT CARDS  
(2 hour flight) (CONTINUED)

TOD \_\_\_\_\_ beside A/C

START \_\_\_\_\_ Procedure \_\_\_\_\_

F Flow \_\_\_\_\_ RPM \_\_\_\_\_ F Flow \_\_\_\_\_

Before Taxi Check

TOD \_\_\_\_\_

TAXI

Power to Roll \_\_\_\_\_ Brakes S NS

Nosewheel steering Turn Rad. \_\_\_\_\_

NWS Off Brake turn \_\_\_\_\_

Canopy Operation

Visibility

TOD \_\_\_\_\_

LINE UP

Brakes Mill Pwr \_\_\_\_\_

Pump one brake

Engine Acc Time \_\_\_\_\_

RPM \_\_\_\_\_ EGT \_\_\_\_\_ FF \_\_\_\_\_

Throttle friction S NS

FUEL L \_\_\_\_\_ R \_\_\_\_\_

TOD \_\_\_\_\_

FIGURE 4. TYPICAL AIRCRAFT QUALITATIVE EVALUATION FOR A PILOT TRAINING MISSION (1 hour flight)

### TAKEOFF

Brake release  
A/B light  
NWS rel at Rudder Eff A/S \_\_\_\_\_  
CONTROL FORCES L M H \_\_\_\_\_ lbs  
NW LIFT OFF \_\_\_\_\_  
T.O. ROLL \_\_\_\_\_ ft A/S \_\_\_\_\_  
GEAR UP \_\_\_\_\_ sec. FLAPS UP \_\_\_\_\_ sec  
Trim Changes \_\_\_\_\_  
Noises  
Press. Sys  
Acceleration Rotation

### CLIMB

Schedule .9 to 35M  
Control  
Trim  
Visibility  
Dampers  
35M Time \_\_\_\_\_ Fuel L \_\_\_\_\_ R \_\_\_\_\_  
Throttle Mil Level Off  
TOD \_\_\_\_\_

FIGURE 4. TYPICAL AIRCRAFT QUALITATIVE EVALUATION FOR A PILOT TRAINING MISSION (1 hour flight) (CONTINUED)

**SUPERSONIC**

A/B Light  
TRIM CHANGES  
STABILITY

time \_\_\_\_\_

DAMPERS

ON

PULSE

Elev

Rud

CYCLE

TIME

OFF

Elev

Rud

45° Roll

ONE ENGINE IDLE

Wind Up Turn to g Max.

A/S \_\_\_\_\_

"g" \_\_\_\_\_

Stick force gradient

Buffet

FUEL L \_\_\_\_\_

R \_\_\_\_\_

TOD \_\_\_\_\_

FIGURE . 4. TYPICAL AIRCRAFT QUALITATIVE EVALUATION FOR A PILOT TRAINING MISSION (1 hour flight) (CONTINUED)

TURNING PERFORMANCE 300 Kts \_\_\_\_\_ sec

Zoom to Slow A/C

PWR STALL WARN \_\_\_\_\_ STALL \_\_\_\_\_

230 Kts. Flight Roll

STABILITY

DAMPERS	PULSE	CYCLE	TIME
ON	Elev		
	Rud		
OFF	Elev		
	Rud		
Sideslip	6° Approx.		

CUT ONE ENGINE

EMERGENCY GEAR EXTENSION \_\_\_\_\_ sec

AIRSTART

170 knots Flaps Down

Aileron Power

Cycle gear Flaps up TRIM

FUEL L \_\_\_\_\_ R \_\_\_\_\_

TOD \_\_\_\_\_

FIGURE 4. TYPICAL AIRCRAFT QUALITATIVE EVALUATION FOR A PILOT TRAINING MISSION (1 hour flight) (CONTINUED)

DIVE            450 Kts            12M

CLOVERLEAF  
BARREL ROLL  
IMMELMAN

Level at 20M inbound to    VOR

200 Kts            F FLOW \_\_\_\_\_

250 Kts            F FLOW \_\_\_\_\_

300 Kts            F FLOW \_\_\_\_\_

HIGH CONE

240 Kts.

Gear Flaps

Dive Brakes

1 g stall

200 Kts.

STABILITY

Check

STALL RIGHT TURN    190 Kts

Clean up A/C            275 Kts.

turn to ILS

350 Kts.

Speed Brakes

Decelerate

ISL Gear, Flaps, D/C    170 Kts

TOD \_\_\_\_\_

FIGURE 4. TYPICAL AIRCRAFT QUALITATIVE EVALUATION FOR A PILOT TRAINING MISSION (1 hour flight) (CONTINUED)

**SINGLE ENGINE GO-AROUND**

**SINGLE ENGINE TOUCH AND GO**

**RE-ENTER**

**PITCH OUT**

**NO FLAP LANDING**

**TRIM CHANGES**

**TAXI**

**AFTER LANDING CHECK**

**SHUTDOWN**

FIGURE 4. TYPICAL AIRCRAFT QUALITATIVE EVALUATION FOR A PILOT TRAINING MISSION (1 hour flight) (CONTINUED)